

## REMARKS

The Office action mailed 15 April 2005, has been received and its contents carefully noted. The pending claims, claims 1-17, were rejected. By this amendment, claims 1, 7, and 9 have been amended. Support may be found in the specification and the claims as originally filed. No statutory new matter has been added. Therefore, reconsideration and entry of the claims as amended are respectfully requested.

### Rejection under 35 U.S.C. 102(e)

The Examiner rejected claims 1-4, 7-9, 15 and 16 under 35 U.S.C. 102(e) as being anticipated by Lieber et al. (U.S. Patent 6,7423,408). Specifically, the Examiner deemed that Lieber et al. discloses a heterojunction comprising at least one carbon nanotube and at least one nanostructure connected, immobilized, attached, or affixed thereto.

Applicants respectfully submit that the claims as amended clarify that the heterojunction of the present invention comprises at least one nanotube *covalently* connected, immobilized, attached or affixed thereto. Support for the amendment may be found throughout the specification as originally filed. See e.g., paragraphs 64 and 72.

Nowhere does Lieber et al. disclose that the carbon nanotubes are covalently connected to the given nanostructures. In fact, Lieber et al. is directed to a nanotweezers for manipulating and moving nanostructures. Covalent attachment of the nanostructures to the nanotweezers would defeat the purpose of the nanotweezers. Thus, it is clear that the nanostructures are not covalently attached to the nanotweezers in Lieber et al. Consequently, Lieber et al. does not anticipate the present invention as claimed, i.e. heterojunctions comprising at least one nanotube covalently attached to at least one nanostructure.

Therefore, the rejection under 35 U.S.C. 102(e) should properly be withdrawn.

### Rejection under 35 U.S.C. 103(a)

Claims 5, 6, 10, 13 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lieber et al. in view of Wong et al. (U.S. Patent No. 6,875,274). Specifically, the Examiner deemed that Lieber et al. did not disclose ZnS capped CdSe or TiO<sub>2</sub> or CdSe core and ZnS shell

quantum dots, oxidizing the ends of the carbon nanotube, placing at least one amine group on the nanostructure and coupling the end of the carbon nanotube with the nanostructure via an amide bond, but that it would have been obvious to one skilled in the art to combine the disclosures of Lieber et al. and Wong et al. to do such.

Applicants respectfully submit that Wong et al. is not a proper prior art reference. Specifically, Wong et al. has an effective filing date of 13 January 2003. The present application claims the benefit of U.S. Provisional Application Serial No. 60/411,811, filed 30 October 2002. The provisional application discloses capping quantum dots and functionalizing them with amine groups, oxidizing the ends of carbon nanotubes and then covalently coupling the nanostructures to the carbon nanotubes. See e.g. page 7, which is attached hereto. Therefore, the present application has an effective filing date of 30 October 2002. Since Wong et al. is not a proper prior art reference against the present invention, the disclosure of Wong et al. cannot be combined with Lieber et al.

Therefore, a *prima facie* case of obviousness cannot be established and the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

The Examiner rejected claims 11 and 12 under 35 U.S.C. 103(a) as being unpatentable over Lieber et al. and Wong et al. and further in view of Fisher et al. (U.S. Patent No. 6,203,814).

As provided above, Wong et al. is not a proper prior art reference that can be used against the present invention. Applicants respectfully submit that Fisher et al. does not alleviate the deficiencies of Lieber et al. (as previously noted by the Examiner). Since the combination of Lieber et al. and Fisher et al. do not result in the claimed invention, a *prima facie* case of obviousness cannot be established.

Therefore, the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

The Examiner rejected claim 17 under 35 U.S.C. 103(a) as being unpatentable over Lieber et al. in view of Korgel et al. (U.S. Patent No. 6,846,565). Specifically, the Examiner deemed that Lieber et al. does not disclose the nanodevice being a transistor, a light emitting diode, an inverter, resistor, capacitor interconnect, or biosensor but that one skilled in the art would be motivated to combine the light emitting nanoparticles of Korgel et al. to Lieber et al. in

order to obtain the claimed invention.

Applicants respectfully submit that the disclosure of Korgel et al. does not alleviate the deficiencies of Lieber et al. Specifically, Lieber et al. does not teach or suggest a heterojunction comprising at least one nanotube covalently linked to at least one nanostructure. Neither does Korgel et al. Since the prior art references do not, alone or in combination, teach or suggest at least one nanotube covalently linked to at least one nanostructure, a *prima facie* case of obviousness has not been established.

Therefore, the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

**Request for Interview**

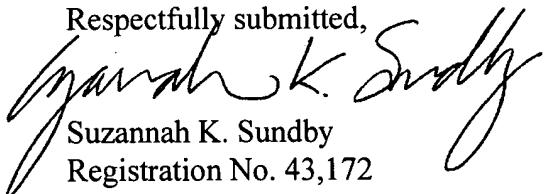
Applicants respectfully request either a telephonic or an in-person interview should there be any remaining issues.

## CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300**, Attorney Docket No. **034044.025 (2003-015-2)**.

Respectfully submitted,



Suzannah K. Sundby  
Registration No. 43,172

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SMITH, GAMBRELL & RUSSELL, LLP  
1850 M Street, N.W., Suite 800  
Washington, D.C. 20036  
Telephone: (202) 263-4332  
Fax: (202) 263-4352  
ssundby@sgrlaw.com

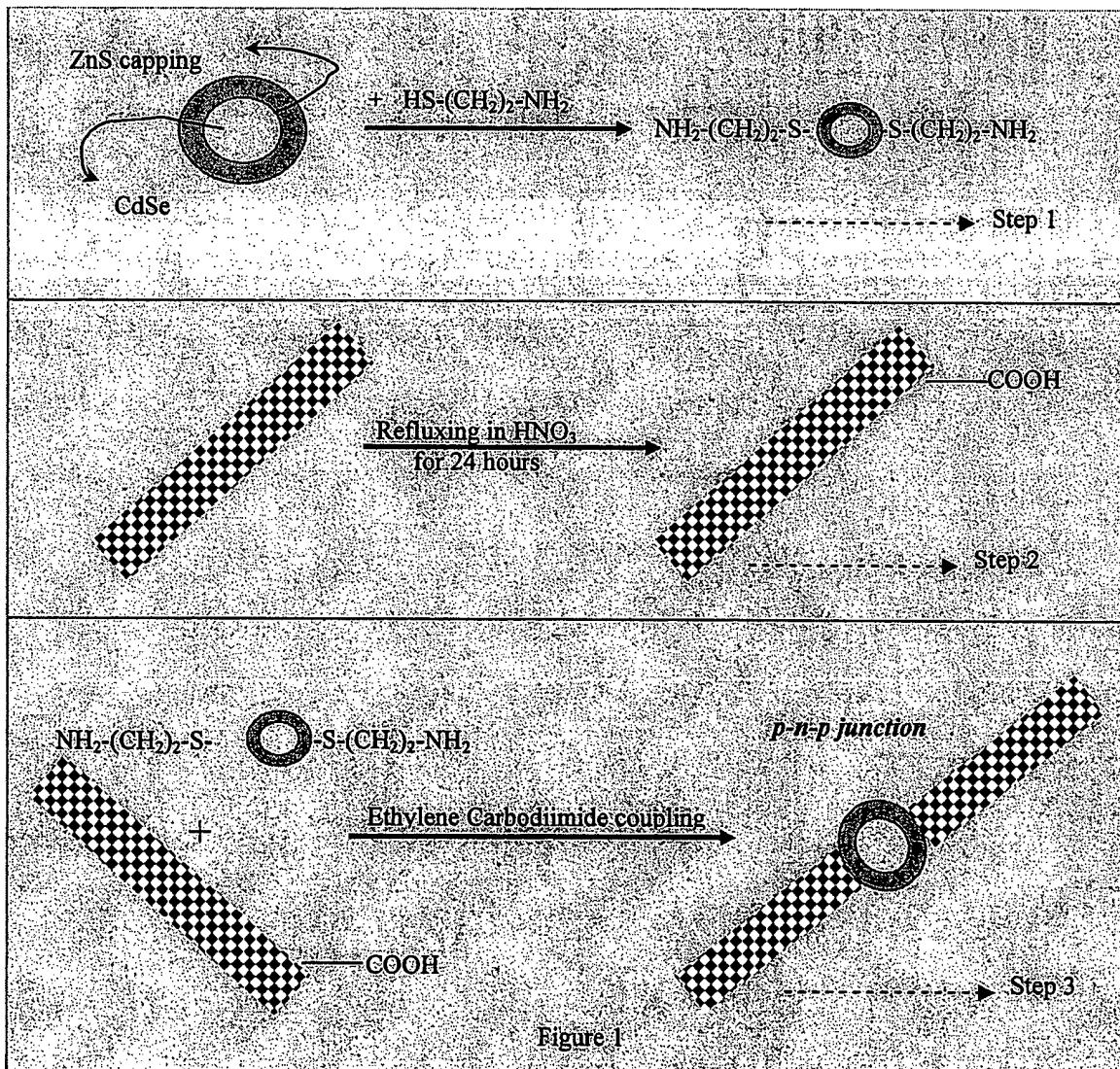


Figure 1